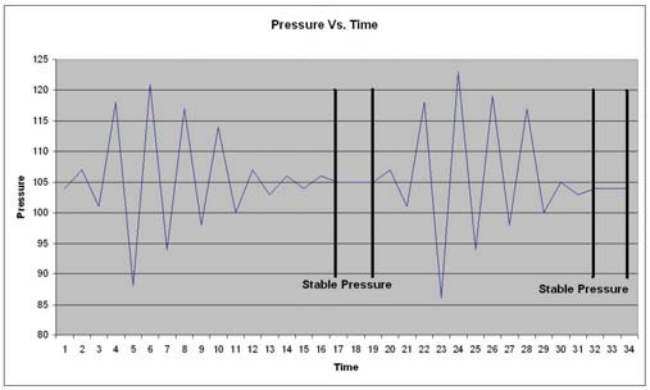
High Shear Fluid Processor with MW100 and DXP

Industry: **Pharmaceutical/Biotechnology**
Product: **Network Solutions**
MW100 and DXP

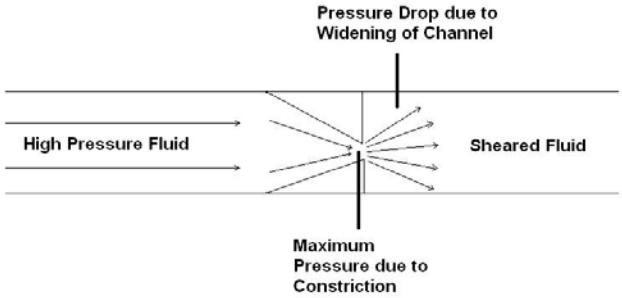
Introduction

A leading manufacturer of high shear fluid processors was looking for a solution to provide secure, stable pressure readings. The speed of the process typically demands a very fast data-logger with enough intelligence to filter out noise while providing accurate results. High-speed sample rates and math logic in MW100 combined with secure, validated logging in the DXP deliver stable, consistent results from an otherwise noisy process.



Application

A simplified explanation of a high shear fluid processor is as follows: highly pressurized fluids are pumped through a tight orifice or restriction – the resulting pressure change from maximum pressure at the center of the restriction to minimum pressure on the far side of the orifice causes cells and other particles to be disrupted and sheared.



A key process variable in this application is pressure. Due to the nature of pumps turning on and off, noise is always present in the pressure signal as pumps engage. Many measurement and recording systems lack both speed and intelligence to accurately capture changes in pressure caused by these pumps. As a result, they are unable to filter out resultant noise. Customers require solutions that record and display accurate pressure readings while eliminating spikes associated with pumping. Since many of these high shear fluid processors are destined for major biotechnology and pharmaceutical customers, recorded data must also adhere to 21 CFR Part 11 requirements and be validation friendly.

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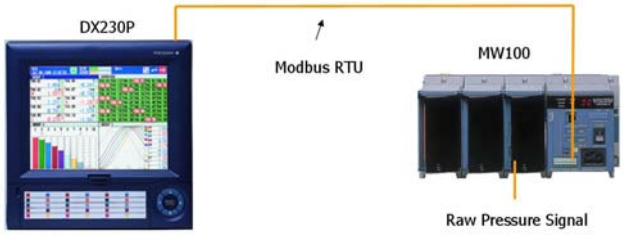
Solution

An ideal solution for recording and displaying data on high shear fluid processors is a combination of both the MW100 and the DXP. Yokogawa's video based DXP recorder is pharmaceutical and biotech friendly. This instrument has been specifically designed for easy validation in the most demanding environments. DXP has multiple levels of security including secure logins and true encrypted data files. DXP's configuration file is an integral part of the historical data file thereby guaranteeing the validity of the recording. MW100 is Yokogawa's latest data acquisition system that features fast sampling rates, superior logic capabilities and multiple communication options.



The DXP and the MW100 were networked using built-in Modbus communications. The MW100 functions as an intelligent data collector and the DXP as the official data-repository where final information is recorded and displayed. The MW100 takes advantage of its 100 ms sampling rate (it can sample as fast as 10 ms) plus on board math logic. Custom computations were created within the MW100 to take raw pressure signals wired as analog inputs and filter the readings. Pump noise is ignored and only stable pressure signals are transmitted to the DXP, which both records and displays clean, stable pressures.

This customer is extremely pleased that they were able to tame the noisy process while providing a high quality, reliable next generation high shear fluid processor.